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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

ROBERT RASMUSSEN
JIANPING YANG

Group Art Unit: 1775

Examiner: A. PIZIALI

Serial No.: 09/589,055

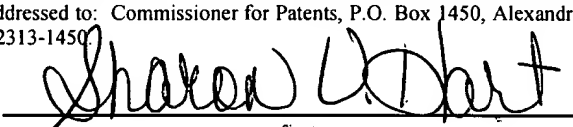
Atty. Dkt.: 2008.002800/
CUSTOMER NO.: 23720

Filed: JUNE 7, 2000

For: METHOD FOR BINDING
PHOSPHOR PARTICLES IN A
FIELD EMISSION DISPLAY
DEVICE

REPLY BRIEF

BOX APPEAL BRIEF
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8	
DATE OF DEPOSIT:	August 12, 2003
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 Signature	

Sir:

Appellants hereby submit an original and two copies of this Reply Brief to the Board of Patent Appeals and Interferences in response to the Examiner's Answer (Paper No. 13) mailed June 12, 2003. No fee is believed due for the filing of this Reply Brief. However, should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to the enclosed material, or should an overpayment be included herein, the Commissioner is authorized to deduct or credit said fees from or to Williams, Morgan & Amerson, P.C. Deposit Account No.

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In the Examiner's Answer, the Examiner repeated the rejections under 35 U.S.C. § 102(e) set forth in the final rejection in this application. In particular, on page 5 of the Examiner's Answer, the Examiner repeats the allegation that the phosphor particle bound substrate disclosed by Janning is identical to, or only slightly different than, the phosphor particle bound substrate prepared by the method of the current claims. The Examiner further alleges that the teachings of the current specification do not mention either of the two methods disclosed by Janning, *i.e.*, atomic layer epitaxy and vapor reaction techniques. Consequently, the Examiner alleges that Appellants have failed to demonstrate a difference between the structure of the phosphor particle bound substrate formed by the prior art methods (atomic layer epitaxy and vapor reaction techniques) and the currently claimed method of submerging the substrate covered with phosphor particles into a binder solution followed by removing the substrate at a predetermined rate. Appellants respectfully disagree and submit that the product, *i.e.*, the phosphor particle bound substrate, produced by the claimed process is not identical to, or an obvious variation of, the product disclosed by Janning.

The phosphor particle bound substrate disclosed by Janning includes a phosphor layer, *i.e.*, a light emitting layer 40, and a barrier layer 52. See Janning col. 9, ll. 16-20 and Figure 2. The barrier layer 52 functions to inhibit effects of phosphor sputtering or decomposition within the FED device, *i.e.*, the barrier layer 52 functions as a binder layer. See Janning, col. 11, ll. 46-55. Janning teaches forming the light emitting layer 40 using the prior art methods of atomic layer epitaxy and vapor reaction techniques. Janning teaches forming the barrier layer 52 using chemical vapor deposition and sputtering, two well-known and acceptable techniques. See

Janning, col. 12, ll. 43-45. Janning also teaches that chemical vapor deposition (CVD) and/or sputtering of these materials is preferred because sputtered and/or CVD films are denser than, *e.g.*, standard thermally evaporated films. See Janning, col. 12, ll. 43-45. The barrier layer 52 is preferably formed of silicon nitride, although silicon dioxide, magnesium fluoride, and polyamide materials may also be used.

In contrast, the binder layer in the present invention includes one or more materials that may be dissolved in liquid and deposited by submerging the substrate into the binder solution and removing the substrate from the binder solution at a predetermined rate, as claimed in independent claims 16 and 48. For example, and as claimed in various dependent claims, the binder layer may include materials such as potassium silicate, sodium silicate, organo-silicate, ammonium silicate, cerium nitrite, indium nitrate, thorium nitrite, and polyvinyl alcohol. *See* Patent Application, page 10, ll. 12-16. Thus, Appellants respectfully submit that the structure of the phosphor particle bound substrate claimed in the present invention is distinct from the barrier layer 52 disclosed by Janning.

Moreover, Appellants respectfully submit that the phosphor particle bound substrate claimed in the present invention is not an obvious variation of the barrier layer 52 disclosed by Janning. In Janning, the barrier layer 52 is not formed by submerging the substrate into a binder solution and removing the substrate from the binder solution at a predetermined rate, as claimed in the present application. Rather, Janning is directed to depositing materials such as silicon nitride. As a result, the barrier layer 52 disclosed in Janning is not formed of materials that may

be dissolved in liquid and deposited by submerging the substrate into a binder solution and removing the substrate from the binder solution at a predetermined rate. In fact, Janning teaches away from Appellants' claimed invention by teaching the use of chemical vapor deposition and sputtering to form the barrier layer 52 from materials such as silicon nitride, silicon dioxide, magnesium fluoride, and polyamide materials. Furthermore, there is no suggestion in the prior art that the materials that form the claimed binder layer may be used to form the barrier layer 52 described in Janning.

In view of the foregoing, it is respectfully submitted that the Examiner erred in rejecting the claims pending in the present application. Accordingly, Appellants respectfully request that the Board overrule the Examiner's decision and issue instructions that all pending claims be allowed.

Respectfully submitted,

WILLIAMS, MORGAN & AMERSON, P.C.
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Date: August 12, 2003

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